SECTION 4.11
NOISE

4.11.1 INTRODUCTION

The purpose of this section is to analyze project-related noise source impacts on-site and to surrounding land uses. This section evaluates short-term construction-related impacts, as well as future buildout conditions. Mitigation measures are also recommended to avoid or lessen the project's noise impacts. Information presented in this section is based upon the *City of Banning General Plan* (January 2006), the *City of Banning Municipal Code* (codified through January 2010), the *Butterfield Specific Plan Traffic Impact Analysis* (September 15, 2010), prepared by LSA Associates, and the *Butterfield Specific Plan* (August 2010), prepared by RBF Consulting.

Definitions

Sound is described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The **A-weighted decibel scale (dBA)** performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud and 20 dBA higher four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples of various sound levels in different environments are illustrated on Exhibit 4.11-1, *Sound Levels and Human Response*.

Numerous methods have been developed to measure sound over a period of time; refer to Table 4.11-1, *Noise Descriptors*.

Table 4.11-1
Noise Descriptors

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measured sound to a reference pressure (20 micropascals).
A-Weighted Decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent Sound Level (L_{eq})	The sound level containing the same total energy as a time varying signal over a given time period. The L_{eq} is the value that expresses the time averaged total energy of a fluctuating sound level.
Maximum Sound Level (L_{max})	The highest individual sound level (dBA) occurring over a given time period.
Minimum Sound Level (L_{min})	The lowest individual sound level (dBA) occurring over a given time period.
Community Noise Equivalent Level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments are +5 dBA for the evening, 7:00 PM to 10:00 PM, and +10 dBA for the night, 10:00 PM to 7:00 AM
Day/Night Average (L_{dn})	The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the L_{eq}. The L_{dn} is calculated by averaging the L_{eq}'s for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 PM to 7:00 AM), by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
Exceedance Level (L_n)	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% (L_{01}, L_{10}, L_{50}, L_{90}, respectively) of the time during the measurement period.
Source: Cyril M. Harris, *Handbook of Noise Control*, dated 1979.	

Health Effects of Noise

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. The percentage of people claiming to be annoyed by noise generally increases with the environmental sound level. However, many factors also influence people's response to noise. The factors can include the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as the person's opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence people's response. As such, response to noise varies widely from one person to another and with any particular noise, individual responses will range from "not annoyed" to "highly annoyed."

When the noise level of an activity rises above 70 dBA, the chance of receiving a complaint is possible, and as the noise level rises, dissatisfaction among the public steadily increases. However, an individual's reaction to a particular noise depends on many factors, such as the source of the sound, its loudness relative to the background noise, and the time of day. The reaction to noise can also be highly subjective; the perceived effect of a particular noise can vary widely among individuals in a community.

The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on the community can be organized into six broad categories:

- Noise-Induced Hearing Loss
- Interference with Communication
- Effects of Noise on Sleep
- Effects on Performance and Behavior
- Extra-Auditory Health Effects
- Annoyance

Although it often causes discomfort and sometimes pain, noise-induced hearing loss usually takes years to develop. Noise-induced hearing loss can impair the quality of life through a reduction in the ability to hear important sounds and to communicate with family and friends. Hearing loss is one of the most obvious and easily quantified effects of excessive exposure to noise. While the loss may be temporary at first, it could become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly caused by the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, substantial damage can be caused by non-occupational sources.

According to the United States Public Health Service, nearly ten million of the estimated 21 million Americans with hearing impairments owe their losses to noise exposure. Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. It can also disrupt effective communication between teachers and pupils in schools, and can cause fatigue and vocal strain in those who need to communicate in spite of the noise.

Interference with communication has proved to be one of the most important components of noise-related annoyance. Noise-induced sleep interference is one of the critical components of community annoyance. Sound level, frequency distribution, duration, repetition, and variability can make it difficult to fall asleep and may cause momentary shifts in the natural sleep pattern, or level of sleep. It can produce short-term adverse effects on mood changes and job performance, with the possibility of more serious effects on health if it continues over long periods. Noise can cause adverse effects on task performance and behavior at work, and non-occupational and social settings. These effects are the subject of some controversy, since the presence and degree of effects depends on a variety of intervening variables. Most research in this area has focused mainly on occupational settings, where noise levels must be sufficiently high and the task sufficiently complex for effects on performance to occur.

Recent research indicates that more moderate noise levels can produce disruptive after-effects, commonly manifested as a reduced tolerance for frustration, increased anxiety, decreased incidence of "helping" behavior, and increased incidence of "hostile" behavior. Noise has been implicated in the development or exacerbation of a variety of health problems, ranging from hypertension to psychosis. As with other categories, quantifying these effects is difficult due to the amount of variables that need to be considered in each situation. As a biological stressor, noise can influence the entire physiological system. Most effects seem to be transitory, but with continued exposure some effects have been shown to be chronic in laboratory animals.

Annoyance can be viewed as the expression of negative feelings resulting from interference with activities, as well as the disruption of one's peace of mind and the enjoyment of one's environment. Field evaluations of community annoyance are useful for predicting the consequences of planned actions involving highways, airports, road traffic, railroads, or other noise sources. The consequences of noise-induced annoyance are privately held dissatisfaction, publicly expressed complaints to authorities, and potential adverse health effects, as discussed above. In a study conducted by the United States Department of Transportation, the effects of annoyance to the community were quantified. In areas where noise levels were consistently above 60 dBA CNEL, approximately nine percent of the community is highly annoyed. When levels exceed 65 dBA CNEL, that percentage rises to 15 percent. Although evidence for the various effects of noise have differing levels of certainty, it is clear that noise can affect human health. Most of the effects are, to a varying degree, stress related.

Sensitive Receptors

Human response to noise varies widely depending on the type of noise, time of day, and sensitivity of the receptor. The effects of noise on humans can range from temporary or permanent hearing loss to mild stress and annoyance due to such things as speech interference and sleep deprivation. Prolonged stress, regardless of the cause, is known to contribute to a variety of health disorders. Noise, or the lack thereof, is a factor in the aesthetic perception of some settings, particularly those with religious or cultural significance. Certain land uses are particularly sensitive to noise, including schools, hospitals, rest homes, long-term medical and mental care facilities, hotels, and parks and recreation areas. Residential areas are also considered noise sensitive, especially during the nighttime hours.

4.11.2 EXISTING CONDITIONS

4.11.2.1 ENVIRONMENTAL SETTING

The Project area encompasses approximately 1,543 acres of vacant or undeveloped land. The closest sensitive receptors within the area are single-family residential homes, mobile homes, and apartment complexes bordering the Project site to the northwest, south, east, and west. Also within proximity of the Project site are hotels, schools, churches, hospitals, and golf courses (one located to the northwest of the project site and one located to the south of the project site, south on Interstate 10). Within the Project site, the Specific Plan is proposing the following sensitive land uses: residential dwelling units, schools, open space, and a golf course. Sensitive receptors can be seen below in Table 4.11-2, *Sensitive Receptors*. The distances are measured from the exterior Project boundary only, and not from individual construction projects/areas/phases within the interior of the Project site.

Ambient Noise Measurements

Obtaining ambient noise measurements provide a baseline for existing noise conditions used to compare existing noise conditions to predicted noise conditions with implementation of a project. In addition, noise measurements also provided information on existing conditions to determine if any existing noise levels in an area exceed applicable noise level criteria. Lastly, existing noise conditions provide measurable data related noise generated by different land uses.

In order to quantify existing ambient noise levels in the Project area, RBF Consulting conducted noise measurements on November 7, 2007; refer to Table 4.11-3, *Noise Measurements*. The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the Project site; refer to Exhibit 4.11-2, *Noise Measurement Locations*. Ten-minute measurements were taken at each site, between 10:00 AM and 1:00 PM. Meteorological conditions were clear skies, warm, with moderate to high wind speeds (0 to 18

miles per hour), and low humidity. As indicated in Table 4.11-3, ambient noise levels range from 44.5 dBA to 62.0 dBA. These noise levels indicate that existing noise levels in the area are typical of residential uses. The highest noise levels (i.e., 62.0 dBA) occurred near two roadways, and traffic noise contributed to the higher ambient noise levels.

Noise monitoring equipment used for the ambient noise survey consisted of a Brüel & Kjær Hand-held Analyzer Type 2250 equipped with a 4189 pre-polarized microphone. The monitoring equipment complies with applicable requirements of the American National Standards Institute for Type I (precision) sound level meters. The results of the field measurements are indicated in Appendix H, *Noise Data*.

Table 4.11-2
Sensitive Receptors

Type	Name	Distance from Project Site (feet)[1]	Direction from Project Site
Residential	Linda Vista Mobile Home Park	54	South
	Single-Family Residential	87	South
	Single-Family Residential	105	East
	Sundance Community Single-Family Residential Uses	175	West
	Mix of Single–Family Residential and Apartment Complexes	418	Southeast
	Highland Springs Country Club/Century Homes Project	808	Northwest
Hotels/Motels	Hampton Inn & Suites	1,740	South
	Highland Springs Resort	1,880	West
Schools	Pass Christian Pre-School	96	South
	Sundance Elementary School	2,030	West
Churches	First Assembly of God	96	South
	Highland Springs Fellowship	96	South
	Church of Jesus Christ of Latter Day Saints	170	South
	Fountain of Life Church	2,400	East
	Mountain Avenue Baptist Church	2,420	East
Hospitals	Cherry Valley Health Care	150	South
	San Gorgonio Memorial Hospital	290	South

Note:
1 – Distances are measured from the exterior Project boundary.

Source: Google Earth 2010.

Table 4.11-3
Noise Measurements

Site No.	Location	Leq (dBA)	Time
1	Wilson and Highland Springs.	53.1	10:40 AM
2	Highland Springs Avenue and Cherry Valley Boulevard	44.5	11:00 AM
3	Oak Valley Parkway and Highland Springs Avenue; 25 feet from centerline	62.0	11:20 AM
4	Western terminus of Gilman Street	48.7	11:42 AM
5	Northern terminus of Winchester Drive	48.2	12:00 PM
Notes: RBF Consulting site visit, November 7, 2007.			

Mobile Sources

In order to assess the potential for mobile source noise impacts, it is necessary to determine the noise currently generated by vehicles traveling through the Project area. The existing roadway noise levels in the vicinity of the Project site were calculated, using the Federal Highway Administration's Highway Noise Prediction Model (FHWA RD-77-108) together with several roadway and site parameters. These parameters determine the projected impact of vehicular traffic noise and include the roadway cross-section (such as the number of lanes), roadway width, average daily traffic (ADT), vehicle travel speed, percentages of auto and truck traffic, roadway grade, angle-of-view, and site conditions ("hard" (hard surface conditions such as rocks and concrete that reflect noise) or "soft" (softer surface conditions such as landscaping that absorb noise)). The model does not account for ambient noise levels (i.e., noise from adjacent land uses) or topographical differences between the roadway and adjacent land uses. Noise projections are based on modeled vehicular traffic as derived from traffic information dated September 15, 2010, prepared by LSA Associates.
A 35-mile per hour (mph) average vehicle speed was assumed for existing conditions based on empirical observations and posted maximum speeds along the adjacent roadways. The ADT estimates were obtained from data included in the *Butterfield Specific Plan Traffic Impact Analysis*, prepared by LSA Associates on September 15, 2010.

Existing modeled traffic noise levels are depicted in Table 4.11-4, *Existing Traffic Noise Levels*. As shown in Table 4.11-4, noise within the Project area due to traffic noise ranges from 50.9 dBA to 63.0 dBA, with the highest levels occurring on Highland Springs Avenue between 8th Street and 6th Street.

Stationary Noise Sources

The Project site and surrounding area consists of a mix of residential, hotel/motel, commercial/retail, office, school, church, and hospital uses served by a grid system of arterial and collector streets. The primary sources of stationary noise in the Project vicinity are urban-related activities and noises (e.g., delivery truck loading and unloading, truck movements on driveways, mechanical equipment (such as trash compacters and air conditioning units) gardening equipment, trash pick-up (noise from trash pickup and compacting results from the use of hydraulic equipment to raise and lower the metal trash bins and to compact their contents) , conversations, recreational uses, and parking lot activities). The noise associated with these sources may represent a single-event or a continuous occurrence.

Table 4.11-4
Existing Traffic Noise Levels

Roadway Segment	Existing Conditions				
	ADT	CNEL @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
Oak Valley Parkway					
Between I-10 Westbound Ramps and Elm Avenue	8,355	61.0	144	46	14
Between Elm Avenue and Beaumont Avenue	7,825	60.7	135	43	13
Between Beaumont Avenue and Palm Avenue	8,015	60.9	138	44	14
Between Palm Avenue and Pennsylvania Avenue	6,980	60.2	120	38	12
Between Pennsylvania Avenue and Cherry Avenue	6,465	59.8	112	35	11
Between Cherry Avenue and Orchard Heights Avenue	5,720	59.3	99	31	10
Between Orchard Heights Avenue and Highland Springs Avenue	3,900	57.6	67	21	7
8th Street					
Between Beaumont Avenue and Palm Avenue	1,965	54.11	34	11	3
Between Palm Avenue and Pennsylvania Avenue	2,100	55.2	36	11	4
Between Pennsylvania Avenue and Highland Springs Avenue	3,320	57.1	57	18	6
Wilson Street					
Between Highland Springs Avenue and C Street	5,465	61.8	170	54	17
Between C. Street and Highland Home Road	6,360	62.5	198	63	20
Between Highland Home Road and Sunset Avenue	5,615	61.7	175	55	17
Between Sunset Avenue and Sunrise Avenue	4,510	61.2	140	44	14
Between Sunrise Avenue and 16th Street	3,865	60.2	120	38	12
Between 16th Street and 8th Street	3,410	59.7	106	33	11
Between 8th Street and 4th Street	2,980	59.1	93	29	9
Between 4th Street and San Gorgonio Avenue	2,730	59.0	85	27	8

Table 4.11-4 (continued)
Existing Traffic Noise Levels

Roadway Segment	Existing Conditions				
	ADT	CNEL @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
Ramsey Street					
Between Highland Springs Ave and Highland Home Rd	9,385	61.2	162	51	16
Beaumont Avenue					
Between Oak Valley Parkway and 8th Street	8,180	60.9	141	45	14
Palm Avenue					
Between Oak Valley Parkway and 8th Street	2,075	54.7	36	11	4
Pennsylvania Avenue					
Between Oak Valley Parkway and 8th Street	4,295	58.3	74	23	7
Highland Springs Avenue					
Between Brookside Avenue and Oak Valley Parkway	4,510	63.3	232	73	23
Between Oak Valley Parkway and Starlight Avenue	8,130	65.7	418	132	42
Between Starlight Avenue and 8th Street	11,095	67.1	571	180	57
Between 8th Street and 6th Street	13,295	61.6	164	52	16
Highland Home Road					
Between Wilson Street and Ramsey Street	840	47.9	7	2	1

Notes: ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level.

Source: Roadways segments information obtained from LSA Associates, *Butterfield Specific Plan Traffic Impact Analysis,* September 15, 2010. Noise levels and contour data determined by RBF Consulting.

4.11.2.2 REGULATORY SETTING

Many government agencies have established noise standards and guidelines to protect citizens from various adverse physiological and social effects associated with noise. Standards and guidelines applicable to this project are discussed below.

California Government Code Section 65302(f)

*California Government Cod*e Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of their comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services.

State of California OPR Noise Element Guidelines

The State of California Office of Planning and Research (OPR) *Noise Element Guidelines* include recommended interior and exterior standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The *OPR Guidelines* describe the compatibility of various land uses with a range of environmental noise levels in terms of dBA CNEL.

A noise environment of 50 dBA CNEL to 60 dBA CNEL is considered to be "normally acceptable" for residential uses. The State indicates that locating residential units, parks, and institutions (i.e., churches, schools, libraries, and hospitals) in areas where exterior ambient noise levels exceed 65 dBA CNEL is undesirable. The OPR recommendations also note that, under certain conditions, more restrictive standards than the maximum levels cited may be appropriate. As an example, the standards for quiet suburban and rural communities may be reduced by 5 to 10 dB to reflect their lower existing outdoor noise levels in comparison with urban environments.

Table 4.11-5, *Noise and Land Use Compatibility Matrix*, illustrates the State guidelines established by the State Department of Health Services for acceptable noise levels for each county and city. These standards and criteria are incorporated into the land use planning process to reduce future noise and land use incompatibilities. This table is the primary tool that allows the City to ensure integrated planning for compatibility between land uses and outdoor noise.

The guidelines rank noise land use compatibility in terms of "normally acceptable", "conditionally acceptable", "normally unacceptable", and "clearly unacceptable" noise levels for various land use types. Single-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Multiple-family residential uses are "normally acceptable" up to 65 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries, and churches are "normally acceptable" up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

Table 4.11-5
Noise and Land Use Compatibility Matrix

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential - Low Density, Single-Family, Duplex, Mobile Homes	50 - 60	55 - 70	70-75	75-85
Residential - Multiple Family	50 - 65	60 - 70	70 - 75	70 – 85
Transient Lodging - Motel, Hotels	50 - 65	60 - 70	70 - 80	80 – 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	80 – 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 - 70	NA	65 – 85
Sports Arenas, Outdoor Spectator Sports	NA	50 - 75	NA	70 – 85
Playgrounds, Neighborhood Parks	50 - 70	NA	67.5 - 75	72.5 – 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 70	NA	70 - 80	80 – 85
Office Buildings, Business Commercial and Professional	50 - 70	67.5 - 77.5	75 - 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	75 - 85	NA

NA: Not Applicable

Source: Office of Planning and Research, California, *General Plan Guidelines*, October 2003.

Normally Acceptable – Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
Conditionally Acceptable – New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.
Normally Unacceptable – New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Clearly Unacceptable – New construction or development should generally not be undertaken.

California Code of Regulations Title 25, Section 1092

Title 25, Section 1092 of the *California Code of Regulations*, sets forth requirements for the insulation of multiple-family residential dwelling units from excessive and potentially harmful noise. Whenever multiple-family residential dwelling units are proposed in areas with excessive noise exposure, the developer must incorporate features into the building's design that reduce interior noise levels to a maximum of 45 dBA CNEL.

City of Banning General Plan Noise Element

The Noise Element of the *General Plan* is intended to coordinate the community's land uses with the existing and future noise environment. Further, this element provides for design measures that are intended to minimize or avoid community exposure to excessive noise levels. The potential for land use conflicts that can result in an unacceptable noise environment increase as the City grows. The implementation of policies and programs set forth in the Noise Element can greatly reduce or even avoid current and future noise impacts and land use conflicts.

The Noise Element includes the following Goals and Policies:

- Goal: A noise environment that complements the community's residential character and its land uses.
    - Policy 1: The City shall protect noise sensitive land uses, including residential neighborhoods, schools, hospitals, libraries, churches, resorts and community open space, from potentially significant sources of community noise.
    - Policy 2: The relationship between land use designations in the Land Use Element and changes in the circulation pattern of the City, as well as individual developments, shall be monitored and mitigated.
    - Policy 3: Private sector project proposals shall include measures that assure that noise exposure levels comply with State of California noise insulation standards as defined in Title 25 (California Noise Insulation Standards) and/or Banning Ordinances 1138 and 1234, whichever is more restrictive.
    - Policy 4: The City shall maintain a General Plan Circulation Map and assure low levels of traffic within neighborhoods by assigning truck routes to major roadways only.
    - Policy 5: The City shall ensure that flight paths and airport improvements adhere to all local, state and federal noise regulations.
    - Policy 6: All development proposals within the noise impact area of the Interstate and the railroad shall mitigate both noise levels and vibration to acceptable levels through the preparation of focused studies and analysis in the development review and environmental review process.
    - Policy 7: The City shall coordinate with adjoining jurisdictions to assure noise-compatible land uses across jurisdictional boundaries.

- Policy 8: The City shall impose and integrate special design features into proposed development that minimize impacts associated with the operation of air conditioning and heating equipment, on-site traffic, and use of parking, loading and trash storage facilities.

- Policy 9: The City shall support development that results in grade separated railroad tracks.

According to Chapter V, *Environmental Hazards*, page V-49 of the Noise Element of the *General Plan*, the applicable one-hour average limit for outdoor noise levels in residential areas is 55 dBA during daytime hours, and 45 dBA during evening and nighttime areas. These noise impacts are characteristically "unmitigated" and represent the worst-case noise impact without any obstruction or attenuation of the noise.

City of Banning Noise Ordinance

As stated in Chapter V, Environmental Hazards, page V-51 of the Noise Element of the *General Plan*, the City of Banning Noise Ordinance, *Title 8 (Health and Safety)*, *Chapter 8.44 (Noise)*, is designed to establish criteria and standards for the regulation of noise levels within the City and to implement the noise provision contained in the City's General Plan. All ambient noise measurements shall commence at the base ambient noise levels in decibels within the respective times and zones as presented in Table 4.11-6, *Base Ambient Noise Levels*.

Table 4.11-6
Base Ambient Noise Levels

Decibels	Time	Zone Use
45 dB(A)	10:00 P.M. – 7:00 A.M.	Residential
55 dB(A)	7:00 A.M. – 10:00 P.M.	Residential
75 dB(A)	Anytime	Industrial and Commercial
Source: City of Banning, Title 8 *(Health and Safety)*, Chapter 8.44 *(Noise)*, Section 8.44.050 (*Base Ambient Noise Level*) of the *Municipal Code*.		

Section 8.44.090.E (Noise Prohibited – Unnecessary Noise Standard – Construction, Landscape Maintenance or Repair) addresses the following provision:

E. Construction, landscape maintenance or repair.

1. *It shall be unlawful for any person to engage in or permit the generation of noise related to landscape maintenance, construction including erection, excavation, demolition, alteration or repair of any structure or improvement, at such sound levels, as measured at the property*

line of the nearest adjacent occupied property, as to be in excess of the sound levels permitted under this chapter, at ***other times than between the hours of 7:00 A.M. and 6:00 P.M****. The person engaged in such activity is hereby permitted to exceed sound levels otherwise set forth in this chapter for the duration of the activity during the above described hours for purposes of construction. However, nothing contained herein shall permit any person* ***to cause sound levels to at any time exceed fifty-five dB(A) for intervals of more than fifteen minutes per hour*** *as measured in the interior of the nearest occupied residence or school.*

2. *Construction related noise as defined in subsection (E)(1) immediately above, may take place outside the time period set forth in subsection (E)(1) and above the relative sound levels in case of urgent necessity in the interest of public health and safety, and then only with the prior permission of the building inspector. Such permit may be granted for a period not to exceed three days or until the emergency ends, whichever is less. The permit may be renewed for periods of three days while the emergency continues.*

3. *If the building official should determine that the public health and safety will not be impaired by the construction related noise, the building inspector may issue a permit for construction within the hours of 6:00 P.M. and 7:00 A.M., upon application being made at the time the permit for the work is awarded or during the progress of the work. The building official may place such conditions on the issuance of the permit as to him or her shall seem appropriate to maintain the public health and safety.*

4.11.3 SIGNIFICANCE THRESHOLD CRITERIA

CEQA Thresholds

Appendix G, of the *CEQA Guidelines* contains analysis guidelines related to the assessment of noise impacts. These guidelines have been utilized as thresholds of significance for this analysis. As stated in Appendix G, a project would create a significant environmental impact if it would:

a) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;

b) Expose persons to or generate excessive ground borne vibration or ground borne noise levels;

c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

d) Expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; *Effects Found Not To Be Significant*

f) For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels. *Effects Found Not To Be Significant*

The proposed Project is located over two miles from the Banning Airport, is not located within any of the airport's CNEL contours and is outside of the Airport Land Use Plan boundary. Accordingly, there are no impacts associated with airport operations and the thresholds will not be addressed in this analysis.

Significance of Changes in Traffic Noise Levels

If the ambient noise environment is quiet and the new noise source substantially increases the noise exposure, a significant impact could occur, even though a criterion level might not be exceeded. Based on data from data from the Federal Interagency Committee on Noise (FICON) the following criteria are used to determine if the Project would create a potentially significant impact for traffic noise levels:

- An increase of the existing ambient noise levels by 5 dB or more, where the ambient level is less than 60 dB CNEL;

- An increase of the existing ambient noise level by 3 dB or more, where the ambient level is 60 to 65 dB CNEL; or

- An increase of the existing ambient noise level by 1.5 dB or more, where the ambient level is greater than 65 dB CNEL.

The project would result in a significant noise impact when a permanent increase in ambient noise levels exceeds the criteria above and the resulting noise level exceeds the applicable exterior standard at a noise sensitive use.

Significance of Changes in Cumulative Traffic Noise Levels

The Project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds perception level (i.e., auditory level increase) threshold. The combined effect compares the "cumulative with Project" condition to "existing" conditions.

This comparison accounts for the traffic noise increase from the Project generated in combination with traffic generated by projects in the cumulative projects list. The following criteria have been utilized to evaluate the combined effect of the cumulative noise increase and are based on data from FICON, who issued this method to assess noise impacts via the Federal Register on July 14, 2000.

Combined Effects: The cumulative with Project noise level ("Long-Term With Project") causes the following:

- An increase of the existing noise level by 5 dB or more, where the existing level is less than 60 dB CNEL;
- An increase of the existing noise level by 3 dB or more, where the existing level is 60 to 65 CNEL; or
- An increase of the existing noise level by 1.5 dB or more, where the existing level is greater than 65 dB CNEL.

Although there may be a significant noise increase due to the proposed Project in combination with other related projects (cumulative effects), it must also be demonstrated that the Project has a significant incremental effect. In other words, a significant portion of the noise increase must be due to the proposed Project. The following criteria have been utilized to evaluate the incremental effect of the cumulative noise increase.

Incremental Effects: The "Long-Term With Project" causes a 1 dBA increase in noise over the "Long-Term Without Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded and the resulting noise level exceeds the applicable exterior standard at a noise sensitive use.

4.11.4 IMPACTS AND MITIGATION MEASURES

ANALYTIC METHOD

The methodology for determining a significant impact related to noise is the same whether applied to the proposed Project on a programmatic or a project level. The primary short-term sources of noise associated with the proposed Project would be construction activities within the Specific Plan area and in connection with the construction of off-site infrastructure and Project-related traffic. Long-term noise sources would include new stationary sources (such as heating, ventilation, and air conditioning units) and increased human activity including both indoor and outdoor activities (such as conversations, recreational uses, music, parking lot

activities, traffic, and gardening) throughout the Project site. The net increase in noise generated by these activities and other sources has been quantitatively estimated and compared to applicable noise standards and thresholds of significance as part of this analysis.
Ground borne vibration would also be generated during the construction phase(s) of the proposed Project, which would include grading and excavation, infrastructure construction and vertical construction. Accordingly, ground borne vibration levels generated by construction equipment have also been quantitatively estimated and compared to applicable thresholds of significance.

PROJECT DESIGN FEATURES AND EXISTING REGULATIONS, RULES AND REQUIREMENTS

Existing local, State and federal regulations noted below will avoid or mitigate potential impacts related to noise. The following Project Design Features will also reduce, avoid, or offset potentially adverse impacts:

1) The Project is proposed to be developed in Phases, which include four mass grading phases and five development phases. The initial Phase IA grading would be limited to the area necessary to achieve a balanced site and proper drainage, leaving approximately 40% of the site in its natural condition until the later phases of Project development, thereby reducing the noise impacts associated with mass grading during the interim implementation phases.

2) The Project has been redesigned from the currently approved Deutsch Specific Plan, to retain the northern steeper slopes in natural open space. In addition, in response to initial public scoping and discussions with adjacent residents, the applicant further redesigned the Land Use Plan to create a lower residential density in Planning Area 50, and an overall higher "clustered" residential density throughout the Specific Plan area, which uses less land area for development. Furthermore, the Project has been revised to provide a greater separation between proposed development areas and existing residential areas along open space easement Planning Area 74, reducing potential noise impacts from construction and long-term uses in this area.

3) The Project will be constructed in compliance with all applicable provisions of Chapter 8.44 (*Noise*) of the City's Municipal Code including, to the extent feasible, observing time limitations on construction noise that exceeds Base Ambient Noise Levels pursuant to statute.

4) All residential structures built on the Project site shall incorporate design measures to ensure that interior noise levels for residential development do not exceed 45 dBA, in accordance with Title 25 (California Noise Insulation Standards) and the City's Municipal Code.

5) All development on the Project site shall comply with State Code requirements for unit-to-unit airborne sound isolation, both laterally and vertically, and for vertical impact sound isolation in multi-family residential construction.

6) During the preparation of construction drawings for project-specific development, the exact acoustical specifications for window glass in buildings with unshielded first and second floor windows shall be determined, pursuant to the requirements of Chapter V, Environmental Hazards, page V-49 of the City's General Plan and the Chapter 8.44.050 Base Ambient Noise Level of the City's Municipal Code.

IMPACT ANALYSIS AND MITIGATION MEASURES

Impact 4.11-1: Short-Term Construction Noise Impacts

Threshold: *Would the Project result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project.*

Determination: Less than Significant with Mitigation Incorporated

The Project site would be developed in five main phases over a period of approximately 30 years, with an estimated 180 dwelling units to be developed per year on average. Appropriate levels of infrastructure and any required improvements would be provided as development proceeds.

Phase 1

In Phase 1, approximately 60 percent of the Project site would be mass-graded. The golf course and PAs 1A, 1B, 1C, 2 through 8, 17 through 19, 22 through 27, 35, 38, 39, and 71 would be developed. A detention basin would be constructed in PA 71. The Smith Creek's watercourse would be realigned through the golf course area. Drainage improvements within PA 19 would be built to safely transmit accumulated upstream and Project-originated drainage flows to the existing Smith Creek Channel culvert southeast of Butterfield, south of Wilson Street. Phase 1 would also include the installation of infrastructure needed to support the development planned for this phase, including installation of on-site and off-site water, recycled water, sewer pipelines, and dry utility lines. Project entry roadways extending from the South Loop Collector Street to the west and south would be constructed. Also, the extent of "F" Street adjacent to the golf course, as well as the Phase 1 adjacent portions of Highland Springs Avenue (south of "F" Street) and of Wilson Street would be built.

Phase 2

Phase 2 would include the development of PAs 9 through 16, 20, 21, 28 through 33, 36 and 37. The South Loop Collector's Street's eastern half would be completed incrementally. The Project entry roadways extending northward and eastward from the South Loop Street would be constructed. Also, the remaining extent of F Street from the golf course edge to Highland Home Road along with the Phase 2 adjacent portion of Highland Home Road south of F Street would be constructed.

Phase 3

Phase 3 would include the remaining PAs between Brookside Avenue, Highland Home Road, and F Street within the northwestern corner of the Project area would be developed. The areas include PAs 34, 40 through 42, 43, 44 through 49, 53 through 59, 62 through 66, and 72. The entirety of the North Loop Collector Street would be built. Phase 3 adjacent portions of Highland Springs Avenue north of F Street and Brookside Avenue and Highland Home Road, north of F Street and east of Highland Springs Avenue, would also be constructed.

Phase 4

The PAs to the east of Highland Home Road would be developed in Phase 4. The areas include PAs 50, 51, 52, and 67.

Phase 5

Within Phase 5, the PAs north of Brookside Avenue, within the northernmost extent of the Specific Plan would be developed. The areas include PAs 60 and 61.

Construction activities generally result in periodic, temporary increases in the ambient noise environment. Construction is expected to occur evenly over a 30 year period, with an estimated 180 dwelling units to be developed per year on average. For the purposes of this analysis, it is assumed that Phase 1 would be constructed between 2012 and 2015; Phase 2 would be constructed between 2016 and 2018; Phase 3 would be constructed between 2019 and 2031; Phase 4 would be constructed between 2032 and 2034; and Phase 5 would be constructed between 2035 and 2037. However, the timing and sequence of phasing will only occur as appropriate levels of infrastructure and required improvements are developed. Construction activities would consist of grading, trenching, paving, and building construction. Groundborne noise would typically occur during the initial site preparation since activities that occur during this phase include earthmoving and soils compaction. High groundborne noise levels and other miscellaneous noise levels can be created during this phase due to the operation of heavy-duty trucks, backhoes, and front-end loaders as well air compressors, hand-held power tools, and blowers. No pile-driving activities would occur during construction of the proposed project.

The anticipated short-term construction noise levels generated during grading, trenching, paving, and building construction during Phases 1 through 5 are presented in Table 4.11-7, *Maximum Phase 1 Construction Noise Levels*, Table 4.11-8, *Maximum Phase 2 Construction Noise Levels*, Table 4.11-9, *Maximum Phase 3 Construction Noise Levels*, Table 4.11-10, *Maximum Phase 4 Construction Noise Levels*, and Table 4.11-11, *Maximum Phase 5 Construction Noise Levels*. Noise models were run using the Federal Highway Administration's Roadway Construction Noise Model (FHWA-HEP-05-054). The distance is measured from the nearest off-site or on-site sensitive receptor to the closest approximate construction activity area of the Project site, using the Project's tentative tract maps and Google Earth.

Tables 4.11-7 through 4.11-11 assume a 20 dBA attenuation factor to account for the noise attenuation achieved through normal building insulation pursuant to State Code and indicated the maximum noise level for sensitive receptors without accounting for attenuation provided by mitigation measures. In many cases, Project-related noise would be further buffered from adjacent receptors by intervening topography or structures, or by adjacent streets and/or drainage channels, and off-site areas also include perimeter walls, all of which would serve to reduce the net noise impact during Project construction and operation.

The following construction-related noise impacts also apply to interim conditions where construction of future Project phases may result in temporary construction-related noise impacts to sensitive receptors in previously developed phases.

Table 4.11-7
Maximum Phase 1 Construction Noise Levels without Mitigation Measures

Description	Receptor Locations		Estimated Exterior Construction Noise Level[3,4]	Estimated Interior Construction Noise Level[3,4]
	Direction[1]	Distance[2]		
Grading	Northwest	1,410	60.6	40.6
	South	54	89.0	69.0
	East	1,800	58.5	38.5
	West	175	78.7	58.7
Trenching	Northwest	1,410	58.0	38.0
	South	54	86.4	66.4
	East	1,800	55.9	35.9
	West	175	76.1	56.1
Paving	Northwest	1,410	57.3	37.3
	South	54	85.6	65.6
	East	1,800	55.1	35.1
	West	175	75.4	55.4
Building Construction	Northwest	1,410	57.9	37.9
	South	54	85.6	65.6
	East	175	55.1	35.1
	West	1,240	75.4	55.4

Notes:
1. Off-site uses to the northwest, south, east, and west are residential.
2. Distance is measured from the nearest off-site or on-site sensitive receptor to the closest approximate construction activity area for Phase 1 of the Project site.
3. Derived from the Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054),* dated January 2006. Refer to Appendix H.
4. A typical building can reduce noise levels by 20 dBA with the windows closed. This assumes all windows and doors are closed, thereby attenuating the exterior noise levels by 20 dBA.

Source: Federal Highway Administration, *Roadway Construction Noise Model (FHWA – HEP – 05-054)*, January 2006; refer to Appendix H.

To summarize, Phase 1 construction activities could expose adjacent receptors to interior noise levels of:

- 38.5 dBA to 69.0 dBA during the grading phase;
- 35.9 dBA to 66.4 dBA during the trenching phase;
- 35.1 dBA to 65.6 dBA during the paving phase; and
- 35.1 dBA to 65.6 dBA during the building construction phase.

Table 4.11-8
Maximum Phase 2 Construction Noise Levels without Mitigation Measures

Description[1]	Receptor Locations		Estimated Exterior Construction Noise Level[4,5]	Estimated Interior Construction Noise Level[4,5]
	Direction[2]	Distance[3]		
Trenching	Northwest	6,212	42.1	22.1
	South	87	79.2	59.2
	East	105	77.6	57.6
	West	50	84.0	64.0
Building Construction	Northwest	6,212	45.0	25.0
	South	87	82.0	62.0
	East	105	77.6	57.6
	West	50	84.0	64.0

Notes:
1. Grading for Phase 2 conducted in Phase 1 and no paving proposed in Phase 2.
2. Off-site uses to the northwest, south, and east are residential. On-site uses to the west after Phase 1 completion are residential and parks.
3. Distance is measured from the nearest off-site or on-site sensitive receptor to the closest approximate construction activity area for Phase 2 of the Project site.
4. Derived from the Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054)*, dated January 2006. Refer to Appendix H.
5. A typical building can reduce noise levels by 20 dBA with the windows closed. This assumes all windows and doors are closed, thereby attenuating the exterior noise levels by 20 dBA.

Source: Federal Highway Administration, *Roadway Construction Noise Model (FHWA – HEP – 05-054)*, January 2006; refer to Appendix H.

To summarize, Phase 2 construction activities could expose adjacent receptors to interior noise levels of:

- 22.1 dBA to 64.0 dBA during the trenching phase; and
- 25.0 dBA to 64.0 dBA during the building construction phase.

Table 4.11-9
Maximum Phase 3 Construction Noise Levels without Mitigation Measures

Description	Receptor Locations		Estimated Exterior Construction Noise Level[3,4]	Estimated Interior Construction Noise Level[3,4]
	Direction[1]	Distance[2]		
Grading	Northwest	200	77.8	57.8
	South	50	86.9	66.9
	East	50	86.9	66.9
	West	50	86.9	66.9
Trenching	Northwest	200	75.0	55.0
	South	50	86.9	66.9
	East	50	86.9	66.9
	West	50	86.9	66.9
Paving	Northwest	200	74.2	54.2
	South	50	86.9	66.9
	East	50	86.9	66.9
	West	50	86.9	66.9
Building Construction	Northwest	200	74.8	54.8
	South	50	86.9	66.9
	East	50	86.9	66.9
	West	50	86.9	66.9

Notes:
1. Off-site uses to the northwest are residential. On-site uses to the south, east, and west after Phase 1 and 2 completions are residential and parks.
2. Distance is measured from the nearest off-site or on-site sensitive receptor to the closest approximate construction activity area for Phase 3 of the Project site.
3. Derived from the Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054)*, dated January 2006. Refer to Appendix H.
4. A typical building can reduce noise levels by 20 dBA with the windows closed. This assumes all windows and doors are closed, thereby attenuating the exterior noise levels by 20 dBA.

Source: Federal Highway Administration, *Roadway Construction Noise Model (FHWA – HEP – 05-054)*, January 2006; refer to Appendix H.

To summarize, Phase 3 construction activities could expose adjacent receptors to interior noise levels of:

- 57.8 dBA to 66.9 dBA during the grading phase;
- 55.0 dBA to 66.9 dBA during the trenching phase;
- 54.2 dBA to 66.9 dBA during the paving phase; and
- 54.8 dBA to 66.9 dBA during the building construction phase.

Table 4.11-10
Maximum Phase 4 Construction Noise Levels without Mitigation Measures

Description	Receptor Locations		Estimated Exterior Construction Noise Level[3,4]	Estimated Interior Construction Noise Level[3,4]
	Direction[1]	Distance[2]		
Grading	Northwest	50	60.6	40.6
	South	325	86.9	66.9
	East	-	-	-
	West	50	89.1	69.1
Trenching	Northwest	200	87.0	67.0
	South	325	86.9	66.9
	East	-	-	-
	West	50	89.1	69.1
Paving	Northwest	200	86.9	66.9
	South	325	86.9	66.9
	East	-	-	-
	West	50	89.1	69.1
Building Construction	Northwest	200	85.6	65.6
	South	325	86.9	66.9
	East	-	-	-
	West	50	89.1	69.1

Notes:
1. Off-site uses to the south are residential. On-site uses to the northwest and west after Phase 1, 2, and 3 completions are residential. Uses to the east are the San Bernardino Mountain Range.
2. Distance is measured from the nearest off-site or on-site sensitive receptor to the closest approximate construction activity area for Phase 4 of the Project site.
3. Derived from the Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054)*, dated January 2006. Refer to Appendix H.
4. A typical building can reduce noise levels by 20 dBA with the windows closed. This assumes all windows and doors are closed, thereby attenuating the exterior noise levels by 20 dBA.

Source: Federal Highway Administration, *Roadway Construction Noise Model (FHWA – HEP – 05-054)*, January 2006; refer to Appendix H.

To summarize, Phase 4 construction activities could expose adjacent receptors to interior noise levels of:

- 40.6 dBA to 69.1 dBA during the grading phase;
- 67.0 dBA to 69.1 dBA during the trenching phase;
- 66.9 dBA to 69.1 dBA during the paving phase; and
- 65.6 dBA to 69.1 dBA during the building construction phase.

Table 4.11-11
Maximum Phase 5 Construction Noise Levels without Mitigation Measures

Description	Receptor Locations		Estimated Exterior Construction Noise Level[3,4]	Estimated Interior Construction Noise Level[3,4]
	Direction[1]	Distance[2]		
Grading	Northwest	1,640	58.8	38.8
	South	50	89.1	69.1
	East	-	-	-
	West	2,030	57.0	37.0
Trenching	Northwest	1,640	56.7	36.7
	South	50	89.1	69.1
	East	-	-	-
	West	2,030	57.0	37.0
Building Construction	Northwest	1,640	56.5	36.5
	South	50	89.1	69.1
	East	-	-	-
	West	2,030	57.0	37.0

Notes:
1. Off-site uses to the north and west are residential. On-site uses to the south after Phase 1, 2, 3, and 4 completions are residential. Uses to the east are the San Bernardino Mountain Range.
2. Distance is measured from the nearest off-site or on-site sensitive receptor to the closest approximate construction activity area for Phase 5 of the Project site.
3. Derived from the Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054)*, dated January 2006. Refer to Appendix H.
4. A typical building can reduce noise levels by 20 dBA with the windows closed. This assumes all windows and doors are closed, thereby attenuating the exterior noise levels by 20 dBA.

Source: Federal Highway Administration, *Roadway Construction Noise Model (FHWA – HEP – 05-054)*, January 2006; refer to Appendix H.

To summarize, Phase 5 construction activities would expose adjacent receptors to interior noise levels of:

- 37.0 dBA to 69.1 dBA during the grading phase;
- 36.7 dBA to 69.1 dBA during the trenching phase; and
- 36.5 dBA to 69.1 dBA during the building construction phase.

The City's General Plan EIR notes that noise associated with future construction would impact adjacent lands; however, these impacts are expected to be short term. While recognizing that there may occasionally be noise impacts associated with heavy construction equipment, Project-specific implementation of General Plan EIR required mitigation measures and City Code requirements were determined to be sufficient to assure that reasonable noise levels would be maintained on and off-site during the construction phase of projects implemented pursuant to the General Plan. The General Plan EIR specifies both general and construction phase mitigation measures, all of which have either been incorporated into Chapter 8.44 (*Noise*) of the

City's Municipal Code or cited below as Mitigation Measures NOI-1, -2, and -3 for the proposed Project. The General Plan EIR concluded that, with implementation of these mitigation measures and Code requirements, construction noise impacts would be reduced to a less-than-significant level.

According to Chapter 8.44.090 (*Noises Prohibited) of the* Municipal Code, Banning exempts construction noise from strict adherence to the Base Ambient Noise Level (BANL) between the hours of 7 AM and 6 PM, but limits the exceedance to 15 minutes in any one hour period. It should be noted that the exact construction phasing, location, or orientation of proposed uses are not known at this time, and, therefore, areas that will be subject to potentially significant construction noise impacts will be determined on a project by project basis during the development of the site.

Implementation of Mitigation Measure NOI-1 includes both Project-specific mitigations and mitigation measures required by the City's General Plan EIR to reduce construction noise impacts by requiring the applicant to submit a Construction Noise Management Plan to the City's Building Official. As indicated in Mitigation Measure NOI-1, noise attenuation barriers may be required when construction activities would occur adjacent to sensitive receptors. Noise attenuation barriers constructed at the property lines to a height of 8 feet with an STC rating of at least 20 are capable of reducing noise levels by 7.7 dBA.[1] Additionally, Mitigation Measure NOI-2 would help reduce noise impacts by requiring an Applicant-provided Noise Disturbance Coordinator to enforce noise attenuating construction requirements.

NOI-1 As a condition of approval of all grading and building permits, the Applicant shall comply with the following list of noise reduction measures subject to inclusion of additional provisions at the discretion of the Building Official as appropriate:

- Excavation, grading, and other noise-intensive construction activities related to the proposed Project shall be restricted to the hours of operation allowed under Section 8.44.090.E, Noise Prohibited – Unnecessary Noise Standard – Construction, Landscape Maintenance or Repair, of the City Municipal Code. Any deviations from these standards shall require the written approval of the City Building Official. The days and hours shall also apply to any servicing of equipment and to the movement of materials to and from the site.

- The developer shall require, as a condition of contract, that all construction equipment operating on the site be equipped with mufflers and sound control devices (e.g., intake silencers and noise shrouds) no less effective than those provided on the original equipment and no equipment shall have an unmuffled exhaust.

[1] U.S. Department of Housing and Urban Development. *The Noise Guidebook*. 1985.

- The developer shall require all contractors, as a condition of contract, to maintain and tune-up all construction equipment to minimize noise emissions

- Stockpiling and vehicle staging areas shall be located a minimum of 500 feet from occupied residences.[2], and screened from these uses by a solid noise attenuation barrier where necessary to achieve City Municipal Code-required noise attenuation levels.

- Solid noise attenuation barriers (temporary barriers or noise curtains) with a sound transmission coefficient (STC) of at least 20 shall be used along Project boundaries adjacent to sensitive receptors, where noise monitoring, performed by a qualified noise monitor, indicates exceedance of City Municipal Code noise levels for more than 15 minutes in any one hour period.

- Construction activities that occur outside the allowable hours per City standards 6 PM to 7 AM) shall require approval of the City Building Official based on demonstration of unusual circumstances and avoidance of significant impacts to neighboring sensitive receptors. Construction noise exceeding City standards (i.e., interior noise in excess of 50 dBA or exterior noise in excess of 65 dBA) and statutory time limits is anticipated, shall require implementation of additional noise attenuation measures such as temporary noise "curtains" to reduce construction noise to meet City Standards, or offer the affected sensitive receptors the option of temporary relocation at the Developer's expense for the duration of the impact.

- All stationary construction equipment (e.g., air compressor, generators, etc.) shall be operated as far away from the residential and institutional uses as feasible. If this is not feasible, the equipment shall be shielded with temporary sound barriers, sound aprons, or sound skins to the satisfaction of the Building Official.

- In areas subject to potentially significant construction noise impacts, the developer shall be required to monitor and document compliance with all applicable noise level limits.

[2] Each doubling of distance reduces the noise by approximately 4.5 dBA, so for peak construction noise such as scrapers, an exterior noise level of 84 dBA at 50 feet reduces to 70.5 dBA at 400 feet, with a 20 dBA typical noise reduction from closed windows, results in an interior noise level of 50.5 dBA, without any further consideration of attenuation by intervening topography, structures, or perimeter walls.

- Construction haul routes for large equipment and material import/export shall be specified to minimize the use of routes affecting sensitive receptors (e.g., residential, parks, hospitals, schools, convalescent homes, etc.). To the extent feasible, construction phasing for individual subdivisions shall be designed to avoid the need for construction vehicles and related construction traffic to traverse occupied residential neighborhoods. In all cases, trucks shall utilize a route that is least disruptive to sensitive receptors. Construction trucks shall, to the extent feasible, avoid weekday and Saturday AM and PM peak hours (7 AM to 9 AM and 4 PM to 6 PM).

NOI-2 Prior to the issuance of each grading or building permit, the Applicant shall submit to the Building Official a proposed Construction Noise Monitoring Program to respond to and track complaints pertaining to construction noise, throughout demolition and/or grading. Throughout and/or grading, these measures shall include the following:

- A procedure and phone numbers for notifying the City Building and Safety Department staff and Banning Police Department (during regular construction hours and off-hours);

- A sign prominently posted on-site containing the permitted construction days and hours and complaint procedures and the name and phone number of the person(s) to notify in the event of a problem. The sign shall also include a listing of both the City and construction contractor's telephone numbers (during regular construction hours and off-hours);

- The designation of an on-site construction complaint and enforcement manager for the Project. The manager shall act as a liaison between the Project and its neighbors. The manager's responsibilities and authority shall include the following:

    - An active role in monitoring project compliance with respect to noise;
    - Ability to reschedule noisy construction activities to reduce effects on surrounding sensitive receivers;
    - Site supervision of all potential sources of noise (e.g., material delivery, construction staging areas, construction workers, debris box pick-up and delivery) for all trades;
    - Intervening or discussing mitigation options with contractors; and
    - Conducting a preconstruction meeting shall be held with the job inspectors and the general contractor/on-site project manager to confirm

that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.

With implementation of Mitigation Measures NOI-1 and -2, and conformance with the requirements of Chapter 8.44 of the City's Municipal Code, the impacts of construction–related noise on sensitive receptors would be reduced to a less-than-significant level.

Impact 4.11-2: Construction-Related Vibration Impacts

Threshold: *Would the project expose persons to or generate excessive ground borne vibration or ground borne noise levels.*

Determination: Less than Significant with Mitigation Incorporated

Construction activities can generate varying degrees of groundborne vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s).

The City of Banning Municipal Code does not include a threshold standard for determining the significance of vibration impacts. In the absence of vibration thresholds in the City of Banning Municipal Code, guidance from Caltrans is utilized. Table 4.11-12, *Reaction of People and Damage to Buildings at Various Continuous Vibration Levels*, depicts human reactions to various ground vibration levels as well as the effects on buildings.

Table 4.11-12
Reaction of People and Damage to Buildings at Various Continuous Vibration Levels

Vibration Level Peak Particle Velocity (inches/second)	Human Reaction	Effect on Buildings
0.006-0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommend upper level of the vibration to which ruins and ancient monuments should be subjected
0.10	Continuous vibration begins to annoy people	Virtually no risk of "architectural" damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk of "architectural damage to normal dwelling-houses with plastered walls and ceilings Special types of finishes such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
0.4 – 0.6	Vibrations considered unpleasant when continuously subjected.	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: California Department of Transportation, *Transportation Related Earthborne Vibrations, Technical Advisory, Vibration TAV-02-01-R9601*, February 20, 2002.

Table 4.11-12 shows likely human reactions to continuous vibrations caused by passing trains, traffic, or potentially, the movement of heavy earthmoving equipment. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Man-made vibration issues are therefore usually confined to short distances (i.e., 500 feet or less) from the source.

Table 4.11-13, *Typical Vibration Levels for Construction Equipment*, identifies various vibration velocity levels for types of construction equipment that would operate during construction.

Table 4.11-13
Typical Vibration Levels for Construction Equipment

Equipment	Approximate Ground Velocity in Decibels at 25 feet (inches/second)	RMS at 25 feet (inch/second)	Approximate Ground Velocity in Decibels at 50 feet (inches/second)	RMS at 50 feet (inch/second)
Large Bulldozer	87	0.089	81	0.044
Loaded Trucks	86	0.079	80	0.031
Jackhammer	79	0.035	73	0.018
Small Bulldozer	58	0.0003	52	0.002

Source: U.S. Department of Transportation (USDOT), Federal Transit Administration (FTA): Noise and Vibration Impact Assessment, April 1995, Chapter 12
Vdb converted to RMS using $10^{VdB + (12;/20)}$ X 0.000001=v: where v=RMS inch/second; 12=crest factor; 0.000001= accepted reference factor in the US and the Inverse Square Law of decay ($VdB_2=VdB_1-20\log(D_2/D_1)$)

Ground borne vibration (GBV) created by construction activity, notably grading and excavation utilizing large bulldozers, would fall within the range of readily perceivable vibration at 25 feet from source but would not exceed the threshold at which continuous vibration would begin to annoy people. Ground borne vibration would attenuate at a rate of approximately 6 VdB per doubling of distance. The groundborne vibration generated during construction activities would therefore primarily impact sensitive uses that are located adjacent to or within 25 feet of specific project-related activity. It should be noted that the exact construction phasing, location, or orientation of proposed uses are not known at this time, and, therefore, areas that will be subject to potentially significant GBV impacts will be determined on a project by project basis during the development of the site. Since earthmoving equipment and accompany heavy trucks are not stationary, the vibration events at a particular location would be considered infrequent as defined by USDOT (30 or fewer vibration events per day), which are considered suitable for residential uses.

Based upon the information provided in Table 4.11-13, vibration levels could reach up to 87 VdB for construction activities involving large earthmoving equipment and heavy trucks at sensitive uses located within 25 feet of construction. This exceeds the GBV impact levels established by US Department of Transportation for infrequent events for Category 2 (residences) and Category 3 (institutional) land uses (80 VdB and 83 VdB respectively)[3] which would be considered a significant impact. Implementation of mitigation measure NOI-3, would ensure that less than significant construction related vibration impacts associated with human

[3] U.S. Department of Transportation (USDOT), Federal Transit Administration (FTA): Noise and Vibration Impact Assessment, April 1995, Chapter 8.

annoyance would be minimized during construction by requiring the operation of vibration generating equipment as far away from vibration-sensitive uses as feasible:

NOI-3 The Applicant shall, through contract specifications, prohibit the use of any on-site construction equipment generating greater than 0.049 RMS (greater than 79 VpD) within 25 feet of any sensitive use or limit the use of equipment exceeding this standard to less than 30 events per day.

Impact 4.11-3: Long-Term Mobile Noise Impacts

Threshold: *Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.*

Determination: Less than Significant with Mitigation Incorporated

Long-term development within the Project area would result in additional traffic on adjacent roadways, and an increase in vehicular noise in the vicinity of the existing and proposed land uses. The "Long-Term without Project" and "Long-Term With Project" traffic-related noise levels were compared, to determine the level of impact attributable to this project's traffic. As previously discussed, an increase of five dBA or greater in noise levels occurring as a result of Project-related activities would be significant when the "Without Project" noise level is below 60 dBA CNEL. An increase of three dBA or greater in noise levels occurring as a result of Project-related activities would be significant when the "Without Project" noise level is between 60 to 65 dBA CNEL. Finally, an increase of 1.5 dBA or greater would be significant if the "Without Project" noise level is above 65 dBA CNEL.

In Table 4.11-14, *Long-Term Noise Scenarios*, the noise level (dBA at 100 feet from centerline) illustrates what would typically be heard 100 feet perpendicular to the roadway centerline. As indicated in Table 4.11-14 under the "Long-Term Without Project" scenario, noise levels at a distance of 100 feet from the centerline would range from approximately 61.4 dBA to 68.0 dBA. The highest noise levels under "Long-Term without Project" would occur along Oak Valley Parkway between I-10 westbound ramps and Elm Avenue. Although this segment would have the highest noise levels, the project's 0.4 dBA increase would result in a less than significant impact.

It is important to note that the following mobile noise impacts do not account for noise attenuation provided by building insulation (i.e., normal noise reduction created by the building pursuant to Title 25 noise insulation standards, with windows closed). In many cases, traffic noise is further buffered from adjacent receptors by intervening topography, setbacks or structures including perimeter block walls, or by adjacent streets and/or drainage channels, by earthen berms and landscaping, and off-site areas may also include perimeter walls, setbacks and landscaping, all of which would serve to reduce the net noise impact during Project construction and operation.

Table 4.11-14
Long-Term Noise Scenarios

Roadway Segment	Long-Term Without Project		Long-Term With Project		Difference in dBA @ 100 feet from Roadway	Potentially Significant Impact without Mitigation
	ADT	CNEL @ 100 Feet from Roadway Centerline	ADT	CNEL @ 100 Feet from Roadway Centerline		
Oak Valley Parkway						
Between I-10 Westbound Ramps and Elm Avenue	42,355	68.0	46,520	68.4	0.4	*No*
Between Elm Avenue and Beaumont Avenue	26,035	65.9	30,915	66.6	0.7	*No*
Between Beaumont Avenue and Palm Avenue	23,795	65.6	29,275	66.5	0.9	*No*
Between Palm Avenue and Pennsylvania Avenue	23,280	65.4	29,535	66.5	1.1	*No*
Between Pennsylvania Avenue and Cherry Avenue	23,295	65.4	29,845	66.4	1.0	*No*
Between Cherry Avenue and Orchard Heights Avenue	21,140	64.11	28,110	66.2	1.3	*No*
Between Orchard Heights Avenue and Highland Springs Avenue	16,505	63.9	20,720	64.11	1.0	*No*
8th Street						
Between Beaumont Avenue and Palm Avenue	11,160	62.4	14,550	63.6	1.2	*No*
Between Palm Avenue and Pennsylvania Avenue	13,265	63.2	17,370	64.4	1.2	*No*
Between Pennsylvania Avenue and Highland Springs Avenue	15,820	63.9	20,290	65.0	1.1	*No*

Table 4.11-14 (continued)
Long-Term Noise Scenarios

Roadway Segment	Long-Term Without Project		Long-Term With Project		Difference in dBA @ 100 feet from Roadway	Potentially Significant Impact without Mitigation
	ADT	CNEL @ 100 Feet from Roadway Centerline	ADT	CNEL @ 100 Feet from Roadway Centerline		
Wilson Street						
Between Highland Springs Avenue and C. Street	19,080	67.3	24,460	68.3	1.0	***No***
Between C. Street and Highland Home Road	22,615	68.0	29,140	69.1	1.1	***No***
Between Highland Home Road and Sunset Avenue	24,030	68.1	30,190	69.0	0.9	***No***
Between Sunset Avenue and Sunrise Avenue	22,955	68.2	28,200	69.1	0.9	***No***
Between Sunrise Avenue and 16th Street	21,545	67.7	25,950	68.5	0.8	***No***
Between 16th Street and 8th Street	20,385	67.5	23,775	68.1	0.6	***No***
Between 8th Street and 4th Street	20,055	67.4	23,025	68.0	0.6	***No***
Between 4th Street and San Gorgonio Avenue	20,270	67.7	23,065	68.2	0.5	***No***
Ramsey Street						
Between Highland Springs Avenue and Highland Home Road	25,760	65.6	26,475	65.7	0.1	***No***
Beaumont Avenue						
Between Oak Valley Parkway and 8th Street	15,830	63.5	16,005	63.5	0	***No***
Palm Avenue						
Between Oak Valley Parkway and 8th Street	10,100	61.7	10,275	61.8	0.1	***No***

Table 4.11-14 (continued)
Long-Term Noise Scenarios

Roadway Segment	Long-Term Without Project		Long-Term With Project		Difference in dBA @ 100 feet from Roadway	Potentially Significant Impact without Mitigation
	ADT	CNEL @ 100 Feet from Roadway Centerline	ADT	CNEL @ 100 Feet from Roadway Centerline		
Pennsylvania Avenue						
Between Oak Valley Parkway and 8th Street	10,575	61.7	10,750	61.8	0.1	***No***
Highland Springs Avenue						
Between Brookside Avenue and 16th Street	14,245	68.3	17,720	69.2	0.9	***No***
Between 16th Street and F Street	8,775	66.2	14,080	68.2	2.0	***No***
Between F Street and Oak Valley Parkway	12,095	67.5	22,560	70.3	2.8	***No***
Between Oak Valley Parkway and Starlight Avenue	19,975	69.6	33,920	71.9	2.3	***No***
Between Starlight Avenue and 8th Street	24,140	70.5	36,750	72.3	1.8	***Yes***
Between 8th Street and 6th Street	22,870	63.9	39,105	66.2	2.3	***Yes***
Highland Home Road						
Between Northern Loop and G Street[2]	17,790	64.1	25,035	65.6	1.5	***No***
Between G Street and F Street[2]	14,760	63.3	22,755	65.2	1.9	***No***
Between F Street and D Street[2]	12,325	62.5	23,755	65.4	2.9	***No***
Between D Street and Wilson Street[2]	11,985	62.4	24,255	65.5	3.1	***Yes***
Between Wilson Street and Ramsey Street	9,800	58.5	18,735	61.3	2.8	***No***
Notes: ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level.						
Source: Roadway segments information obtained from LSA Associates, *Butterfield Specific Plan Traffic Impact Analysis*, September 15, 2010. Noise levels and contour data determined by RBF Consulting.						

Under "Long-Term with Project" scenario exterior noise levels at a distance of 100 feet from the centerline would range from approximately 61.8 dBA to 68.4 dBA. The highest noise levels under "Long-Term with Project" would occur along the same roadway segments as the "Long-Term Without Project" scenario. 4.11The proposed project would exceed the allowable increase threshold along the following roadway segments:

- Highland Home Road (between D Street and Wilson Street)
- Highland Springs Avenue (Starlight Avenue and 8th Street); and
- Highland Springs Avenue (8th Street and 6th Street)

Two of the locations where potentially significant Project-related traffic noise increases may occur have sound attenuation features the effects of which are not reflected in the forecasted noise levels. Along Highland Springs Road between Starlight and 8th, the existing Sundance homes to the west of the project site are located in the City of Beaumont and have perimeter block walls along the frontage to provide some sound attenuation. Future development areas along the east side of this stretch of road are within the City of Banning and would be designed to provide adequate attenuation pursuant to the outdoor and indoor noise level requirements specified in the City Code. Along Highland Springs Road between 8th and 6th, there are either commercial uses that do not require attenuation, or future project areas that would be designed to incorporate sound attenuation features pursuant to City Code.

Along the segment of Highland Home Road between future "D Street" and Wilson there are existing residential uses with frontage on future Highland Home Road (Meridian Street). The Project proposes to retain the existing Meridian Street as a frontage road with a parkway separating Meridian Street from future Highland Home Road and the Project site, resulting in a distance of approximately 74 feet from existing Meridian Street right of way (east side) to future Highland Home Road centerline, in addition to separation provided by existing sidewalks and front yards. Existing homes along Meridian Street would therefore be buffered from future Highland Home Road traffic noise by two landscaped medians and approximately 100 feet of separation between future Highland Home Road centerline and the existing residential structures. As the Project-related increase is just above the 65 dBA threshold, and the rear yard areas are attenuated by the house, the rear yard exterior noise levels are not anticipated to exceed City noise standards. Interior noise levels to existing homes on the eastside of Highland Homes Road and north of Wilson Street are also not expected to exceed City noise standards, based on a typical noise reduction of 20 dBA for closed windows.

In addition to the typical noise reduction of 20- dBA for closed windows, once more detailed grading and Highland Home Road improvement plans have been developed, Mitigation Measure NOI-4 would require completion of a focused noise study[4] for sensitive receptors

[4] A construction-level acoustic study is not practical at this time, as this study requires final improvement and grading plans to verify elevations, road geometry, and topography.

along Highland Home Road (on-site and off-site) and Wilson Street to determine specific noise reduction measures required, if any, to ensure the proposed project meets the City of Banning exterior and interior noise standards; refer to Mitigation Measure NOI-4. Based on the above, and requirement for Project-level mitigation of Highland Home Road noise impacts, Project-related impacts would be reduced to a less than significant level.

NOI-4 Prior to the issuance of grading permits or encroachment permits for the improvement of Highland Home Road (aka Meridian Street) between future "D Street" and Wilson Street, an acoustical study shall be completed by the Applicant (using construction-level improvement plans and/or more detailed grading plans) and submitted to the City for review and approval. The acoustical study will specify additional specific noise attenuation measures necessary, if any, to ensure that the City of Banning's exterior and interior noise standards are met at adjacent residential properties. Appropriate attenuation measures could include a solid wall in the landscaped parkway between future Highland Home Road and the existing frontage street.

Impact 4.11-4: General Plan and Noise Ordinance or Applicable Standards

Threshold: *Would the Project expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.*

Determination: Less than Significant with Mitigation Incorporated

Impact Analysis: Refer to Impact Statements 4.11-1 regarding construction phase impacts and 4.11-3, regarding long-term street traffic impacts.

Impact 4.11-5: Operational Stationary Source Noise Impacts

Threshold: *Would the Project result in stationary-source noise impacts on nearby sensitive receptors.*

Determination: Less than Significant with Mitigation Incorporated

Residential Uses

The Project proposes new single-family and multi-family residential developments. Noise that is typical of residential areas includes children playing, pets, amplified music, mechanical equipment, car repair, and home repair. Noise from residential stationary sources would primarily occur during the "daytime" activity hours. The City's Code provides procedures for complaints and enforcement of violations of the City's noise standards which provide adequate mitigation for occasional violations of the noise standards by individual homeowners.

Accordingly, noise impacts to surrounding uses associated with implementation of the proposed project are anticipated to be less than significant.

Non-Residential Uses

The new commercial and retail uses, proposed satellite wastewater treatment plant, proposed fire station, parks, school sites, community center, and proposed golf course club house could increase noise levels in their proximity due to recreational uses associated with the parks, school sites, and the community center, truck deliveries, trash pickup and compacting, and other nighttime activities.

It should be noted that the potential wastewater treatment plant would be constructed indoors and therefore is not anticipated to generate a significant increase in ambient noise. In addition, construction of the wastewater treatment plant would be required to implement Mitigation Measure NOI-5 requiring the wastewater treatment plant to obtain a conditional use permit (CUP) and would be required to perform an acoustical analysis, to be approved by the City of Banning, ensuring that the wastewater treatment plan would adhere to noise level thresholds established in the City of Banning *General Plan* and City Code.

Slow Moving Truck Deliveries and Loading Dock Activities. Noise sources at loading docks may include maneuvering and idling trucks, truck refrigeration units, forklifts, banging and clanging of equipment (i.e., hand carts and roll-up doors), noise from public address systems, and voices of truck drivers and employees. The maximum noise levels of slow-moving heavy and small trucks at the loading areas range between 70 dBA and 73 dBA at 50 feet. The maximum level associated with loading docks is typically 76.5 dBA at 50 feet.

The proposed commercial and other non-residential uses are not anticipated to require a significant amount of truck deliveries, given the nature of the uses (neighborhood retail, office and school) and scale (relatively small-scale neighborhood or community uses (such as a neighborhood market), as opposed to regional retail or regional industrial/office which would generate more truck trips). Since the proposed commercial and other non-residential uses would be relatively small, the amount of truck trips would also be relatively low when compared to larger similar types of commercial and non-residential uses. As such, the noise associated with large truck and smaller cargo van deliveries would not be significant. In addition, due to the proposed commercial and non–residential uses being relatively small, the deliveries would consist of vendor deliveries in vans and would be somewhat infrequent and irregular, as opposed to regional type commercial and other non-residential uses. Although truck trips are not anticipated to significantly increase noise within the project area, Mitigation Measure NOI-5 would require noise from proposed commercial and retail uses to be analyzed in further detail once site specific plans have been developed. Implementation of Mitigation Measure NOI-5 would reduce impacts to a less than significant impact level.

Trash Pickup and Compacting. Noise from trash pickup and compacting results from the use of hydraulic equipment to raise and lower the metal trash bins and to compact their contents. The peak noise level is 73.4 dBA at 50 feet during the raising, lowering, and compacting operations. A typical trash pickup takes approximately three minutes. This noise level occurs during approximately one-half of the operation. It is not anticipated that these activities would create a significant impact, as it is a short-term periodic activity.

PAs 1A, 2, 3, 4, and 8 are located adjacent to the proposed commercial uses; Planning Area 11 may be located adjacent to the proposed satellite wastewater treatment facility; and Planning Area 45 is located adjacent to the golf course clubhouse and parking lot. As the exact construction phasing, location, or orientation of proposed uses are not known at this time, Mitigation Measure NOI-5 would require a site specific acoustical assessment in these PAs to evaluate the potential noise impacts to the existing and proposed noise sensitive uses. With implementation of Mitigation Measure NOI-5, noise impacts associated with truck deliveries and trash pickup and compaction would be reduced to a less than significant Level.

NOI-5 Prior to the issuance of building permits for non-residential uses (such as commercial areas, wastewater treatment plant, and the golf course clubhouse), the Applicant shall prepare a site-specific construction level noise analysis, analyzing potential on and off site noise impacts, based upon detailed grading plans, improvement plans and site plans. The grading, site and/or improvement plans for these uses shall include the location of stationary noise sources, such as loading docks, air conditioning units, trash hauling and trash compactors (noise from trash pickup and compacting results from the use of hydraulic equipment to raise and lower the metal trash bins and to compact their contents), and drive-thru lanes. The noise analysis shall evaluate the potential noise impacts to the existing and proposed noise sensitive homes near the commercial areas of the project. In the event the analysis shows that noise levels for any adjacent sensitive receptor(s) would exceed applicable standards, measures shall be required to reduce noise to levels to within applicable standards, including providing enclosures for stationary sources (such as pump stations and air conditioners), and providing walls or siting to attenuate mobile or stationary sources from receptors (such as loading bays). The analysis shall be subject to review and approval by the City Building Official and shall ensure compliance with applicable exterior and interior noise standards.

4.11.5 CUMULATIVE IMPACTS

Threshold: *Would the proposed project and other approved or pending projects result in cumulatively considerable construction noise impacts.*

Determination: Cumulative Construction Phase Noise Impacts: Less than Significant with Mitigation Incorporated

Determination: Cumulative Mobile Noise Impacts: Significant and Unavoidable

Determination: Cumulative Operational Noise Impacts: Less than Significant

Construction Noise Impacts

Construction-related noise for the proposed project and each related project would be localized. Additionally, each of the various cumulative projects would be required to comply with the local noise ordinance, as well as mitigation measures that may be prescribed pursuant to CEQA on a project-specific basis.

Construction noise impacts would cease upon completion of excavation, grading, and building activities. Compliance with project-specific mitigation, compliance with General Plan EIR mitigation measures, as well as compliance with City Code requirement, would serve to minimize the length of time noise-sensitive receptors are exposed to significant noise levels that exceed City standards. In addition, because noise dissipates as it travels away from its source, noise impacts from construction activities would be limited to each of the respective sites and their vicinities. Construction noise from cumulative projects would not interact with noise from the proposed Project due to distances between the specific sites. Therefore, a less than significant impact would occur in this regard.

Cumulative Mobile Noise Impacts

The cumulative mobile noise analysis is conducted in a two step process. First, the combined effects from both the proposed Project and other projects are compared. Second, for combined effects that are determined to be cumulatively significant, the Project's incremental effects then are analyzed. The Project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds perception level (i.e., auditory level increase) threshold. The combined effect compares the "Long-Term with Project" condition to "existing" conditions. This comparison accounts for the traffic noise increase from the Project generated in combination with traffic generated by projects in the cumulative projects list. The following criteria have been utilized to evaluate the combined effect of the cumulative noise increase and are based on data from the Federal Interagency Committee on Noise (FICON), who issued this method to assess noise impacts via the Federal Register on July 14, 2000.

Combined Effects: The cumulative with Project noise level ("Long-Term with Project") causes the following:

- An increase of the existing noise level by 5 dBA or more, where the existing level is less than 60 dBA CNEL;
- An increase of the existing noise level by 3 dBA or more, where the existing level is 60 to 65 dBA CNEL; or
- An increase of the existing noise level by 1.5 dBA or more, where the existing level is greater than 65 dBA CNEL.

Although there may be a significant noise increase due to the proposed Project in combination with other related projects (combined effects), it must also be demonstrated that the proposed Project has a significant incremental effect. In other words, a significant portion of the noise increase must be due to the proposed Project. The following criteria have been utilized to evaluate the incremental effect of the cumulative noise increase.

Incremental Effects: The "Long-Term with Project" causes a 1 dBA increase in noise over the "Long-Term Without Project" noise level.

A significant impact would result only if ***both*** the combined and incremental effects criteria have been exceeded. Noise by definition is a localized phenomenon, and is dramatically reduced as distance from the source increases. Consequently, only proposed projects and growth anticipated to occur in the general vicinity of the proposed Specific Plan area would contribute to cumulative noise impacts. Table 4.11-15, *Cumulative Noise Scenarios*, lists the traffic noise effects along roadway segments in the project vicinity for "Existing Without Project", "Long-Term Without Project", and "Long-Term With Project", including incremental and net cumulative impacts.

It is important to note that the following mobile noise impacts do not take into account attenuation provided by building insulation pursuant to Title 25 (i.e., normal noise reduction created by the building, with windows closed).

First, it must be determined whether the *Combined Effects* criterion is exceeded. Per Table 4.11-15, the criterion is exceeded along the following study roadways:

- Oak Valley Parkway (between Palm Avenue and Pennsylvania Avenue)
- Oak Valley Parkway (between Pennsylvania Avenue and Cherry Avenue)
- Oak Valley Parkway (between Cherry Avenue and Orchard Heights Avenue)
- Oak Valley Parkway (between Orchard Heights Avenue and Highland Springs Avenue)
- 8th Street (between Beaumont Avenue and Palm Avenue)
- 8th Street (between Palm Avenue and Pennsylvania Avenue)
- 8th Street (between Pennsylvania Avenue and Highland Springs Avenue)

- Wilson Street (between Highland Springs Avenue and C Street)
- Wilson Street (between C Street and Highland Home Road)
- Wilson Street (between Highland Home Road and Sunset Avenue)
- Wilson Street (between Sunset Avenue and Sunrise Avenue)
- Wilson Street (between Sunrise Avenue and 16th Street)
- Wilson Street (between 16th Street and 8th Street)
- Wilson Street (between 8th Street and 4th Street)
- Wilson Street (between 4th Street and San Gorgonio Avenue)
- Ramsey Street (between Highland Springs Avenue and Highland Home Road)
- Palm Avenue (between Oak Valley Parkway and 8th Street)
- Pennsylvania Avenue (between Oak Valley Parkway and 8th Street)
- Highland Springs Avenue (between Brookside Avenue and 16th Street)
- Highland Springs Avenue (between 16th Street and F Street)
- Highland Springs Avenue (between F Street and Oak Valley Parkway)
- Highland Springs Avenue (between 8th Street and 6th Street)
- Highland Home Road (between Wilson Street and Ramsey Street)

Secondly, it must be determined whether the *Incremental Effects* criterion is exceeded. Per Table 4.11-15, the *Incremental Effects* criterion is exceeded along the following study roadways:

- Oak Valley Parkway (between Palm Avenue and Pennsylvania Avenue)
- Oak Valley Parkway (between Pennsylvania Avenue and Cherry Avenue)
- Oak Valley Parkway (between Cherry Avenue and Orchard Heights Avenue)
- Oak Valley Parkway (between Orchard Heights Avenue and Highland Springs Avenue)
- 8th Street (between Beaumont Avenue and Palm Avenue)
- 8th Street (between Palm Avenue and Pennsylvania Avenue)
- 8th Street (between Pennsylvania Avenue and Highland Springs Avenue)
- Wilson Street (between Highland Springs Avenue and C Street)
- Wilson Street (between C Street and Highland Home Road)
- Wilson Street (between Highland Home Road and Sunset Avenue)
- Highland Springs Avenue (between Brookside Avenue and 16th Street)
- Highland Springs Avenue (between 16th Street and F Street)
- Highland Springs Avenue (between F Street and Oak Valley Parkway)
- Highland Springs Avenue (between 8th Street and 6th Street)
- Highland Home Road (between Wilson Street and Ramsey Street)

Therefore, the proposed Project would make a cumulatively considerable contribution to cumulative background traffic noise levels, resulting in a cumulatively significant impact at the 13 roadway segments identified in Table 4.11-15.

Table 4.11-15
Cumulative Noise Scenarios

Roadway Segment	Existing Without Project	Long-Term Without Project	Long-Term With Project	Combined Effects	Incremental Effects	Cumulatively Significant Impact
	dBA @ 100 Feet from Roadway Centerline	dBA @ 100 Feet from Roadway Centerline	dBA @ 100 Feet from Roadway Centerline	Difference In dBA Between Existing Without Project and Long- Term With Project	Difference in dBA between Long- Term With Project and Long-Term Without Project	
Oak Valley Parkway						
Between I-10 Westbound Ramps and Elm Avenue	61.0	68.0	68.4	7.4	0.4	*No*
Between Elm Avenue and Beaumont Avenue	60.7	65.9	66.6	5.9	0.7	*No*
Between Beaumont Avenue and Palm Avenue	60.9	65.6	66.5	5.6	0.9	*No*
Between Palm Avenue and Pennsylvania Avenue	60.2	65.4	66.5	6.3	1.1	*Yes*
Between Pennsylvania Avenue and Cherry Avenue	59.8	65.4	66.4	6.6	1.0	*Yes*
Between Cherry Avenue and Orchard Heights Avenue	59.3	64.11	66.2	6.9	1.3	*Yes*
Between Orchard Heights Avenue and Highland Springs Avenue	57.6	63.9	64.11	7.3	1.0	*Yes*
8th Street						
Between Beaumont Avenue and Palm Avenue	54.1	62.4	63.6	8.7	1.2	*Yes*
Between Palm Avenue and Pennsylvania Avenue	55.2	63.2	64.4	9.2	1.2	*Yes*

Table 4.11-15 (continued)
Cumulative Noise Scenarios

Roadway Segment	Existing Without Project	Long-Term Without Project	Long-Term With Project	Combined Effects	Incremental Effects	Cumulatively Significant Impact
	dBA @ 100 Feet from Roadway Centerline	dBA @ 100 Feet from Roadway Centerline	dBA @ 100 Feet from Roadway Centerline	Difference In dBA Between Existing Without Project and Long- Term With Project	Difference in dBA between Long- Term With Project and Long-Term Without Project	
Between Pennsylvania Avenue and Highland Springs Avenue	57.1	63.9	65.0	7.9	1.1	***Yes***
Wilson Street						
Between Highland Springs Avenue and C. Street	61.8	67.3	68.3	6.5	1.0	***Yes***
Between C. Street and Highland Home Road	62.5	68.0	69.1	6.6	1.1	***Yes***
Between Highland Home Road and Sunset Avenue	61.7	68.1	69.0	7.3	0.9	***Yes***
Between Sunset Avenue and Sunrise Avenue	61.2	68.2	69.1	7.9	0.9	***No***
Between Sunrise Avenue and 16th Street	60.2	67.5	68.5	8.3	0.8	***No***
Between 16th Street and 8th Street	59.7	67.5	68.1	8.4	0.6	***No***
Between 8th Street and 4th Street	59.1	67.4	68.0	8.9	0.6	***No***
Between 4th Street and San Gorgonio Avenue	59.0	67.7	68.2	9.2	0.5	***No***
Ramsey Street						
Between Highland Springs Avenue and Highland Home Road	61.2	65.6	65.7	4.5	0.1	***No***
Beaumont Avenue						
Between Oak Valley Parkway and 8th Street	60.9	63.5	63.5	2.6	0	***No***
Palm Avenue						
Between Oak Valley Parkway and 8th Street	54.7	61.7	61.8	7.1	0.1	***No***
Pennsylvania Avenue						
Between Oak Valley Parkway and 8th Street	58.3	61.7	61.8	3.5	0.1	***No***
Highland Springs Avenue						

Table 4.11-15 (continued)
Cumulative Noise Scenarios

Roadway Segment	Existing Without Project	Long-Term Without Project	Long-Term With Project	Combined Effects	Incremental Effects	Cumulatively Significant Impact
	dBA @ 100 Feet from Roadway Centerline	dBA @ 100 Feet from Roadway Centerline	dBA @ 100 Feet from Roadway Centerline	Difference In dBA Between Existing Without Project and Long- Term With Project	Difference in dBA between Long- Term With Project and Long-Term Without Project	
Between Brookside Avenue and Oak Valley Parkway[1]	63.3	N/A	N/A	N/A	N/A	***N/A***
Between Brookside Avenue and 16th Street	63.3	68.3	69.2	5.9	0.9	***Yes***
Between 16th Street and F Street	63.3	66.2	68.2	4.9	2.0	***No***
Between F Street and Oak Valley Parkway	63.3	67.5	70.3	7.0	2.8	***No***
Between Oak Valley Parkway and Starlight Avenue	65.7	69.6	71.9	6.2	2.3	***Yes***
Between Starlight Avenue and 8th Street	67.1	70.5	72.3	5.3	1.8	***Yes***
Between 8th Street and 6th Street	61.6	63.9	66.2	4.6	2.3	***Yes***
Highland Home Road						
Between Northern Loop and G Street[2]	N/A	64.1	65.6	N/A	1.5	***N/A***
Between G Street and F Street[2]	N/A	63.3	65.2	N/A	1.9	***N/A***
Between F Street and D Street[2]	N/A	62.5	65.4	N/A	2.9	***N/A***
Between D Street and Wilson Street[2]	N/A	62.4	65.5	N/A	3.1	***N/A***
Between Wilson Street and Ramsey Street	47.9	58.5	61.3	13.4	2.8	***Yes***

Notes: ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level.

1. Existing Without Project Scenario segment was bisected into two additional intersections under Long-Term Without Project Scenario and Long-Term With Project Scenario.
2. Future roadway segment does not exist under Existing Without Project Scenario conditions.

Source: LSA Associates, *Butterfield Specific Plan Traffic Impact Analysis*, September 15, 2010. Noise levels and contour data determined by RBF Consulting.

Cumulative Operational Noise

The proposed Project would introduce the use of stationary equipment that would increase noise levels within the project area; however, based on the operational stationary source noise impacts analysis, these impacts would be less than significant. Future development proposals within the Cities of Beaumont and Cherry Valley would require separate discretionary approval and CEQA assessment, which would address potential noise impacts and identify necessary attenuation measures, where appropriate.

Mitigation for Cumulative Noise Impacts

The City of Banning requires future developments to consider long-term mobile and stationary noise impacts as part of the project review and approval process, and to incorporate on-site design features to mitigate potentially significant impacts. Many of the affected streets contain non-sensitive uses such as commercial/retail (such as portions of Wilson Street and Highland Springs Avenue), or have residential uses constructed with adequate sound walls given their location on major arterials (such as Highland Springs Avenue). Older residential areas also include perimeter walls that reduce future noise impacts. However, for some older portions of the City, residential areas or other sensitive uses may not have adequate sound attenuation (particularly for units that "front" onto a street, such as those located adjacent to and south of Wilson Street, making sound walls infeasible). The City does not currently have a program for addressing cumulative noise mitigation for existing residential uses.

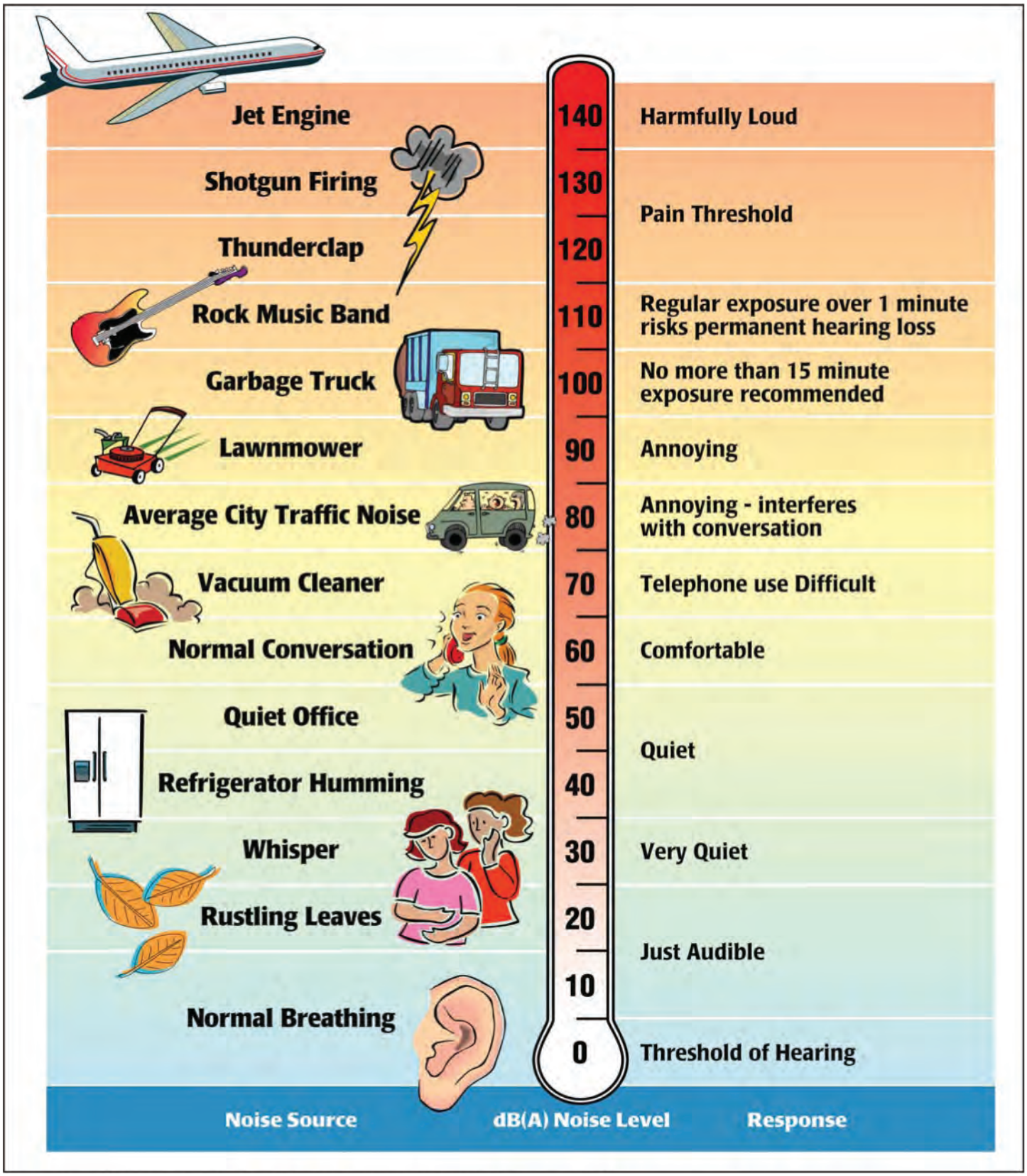
4.11.6 LEVEL OF SIGNIFICANCE AFTER MITIGATION

With implementation of Mitigation Measures NOI-1 and -2, and conformance with the requirements of Chapter 8.44 of the City's Municipal Code, the impacts of construction–related noise on sensitive receptors would be reduced to a less than significant level.

With implementation of NOI-3, vibration impacts would be reduced to less than significant levels.

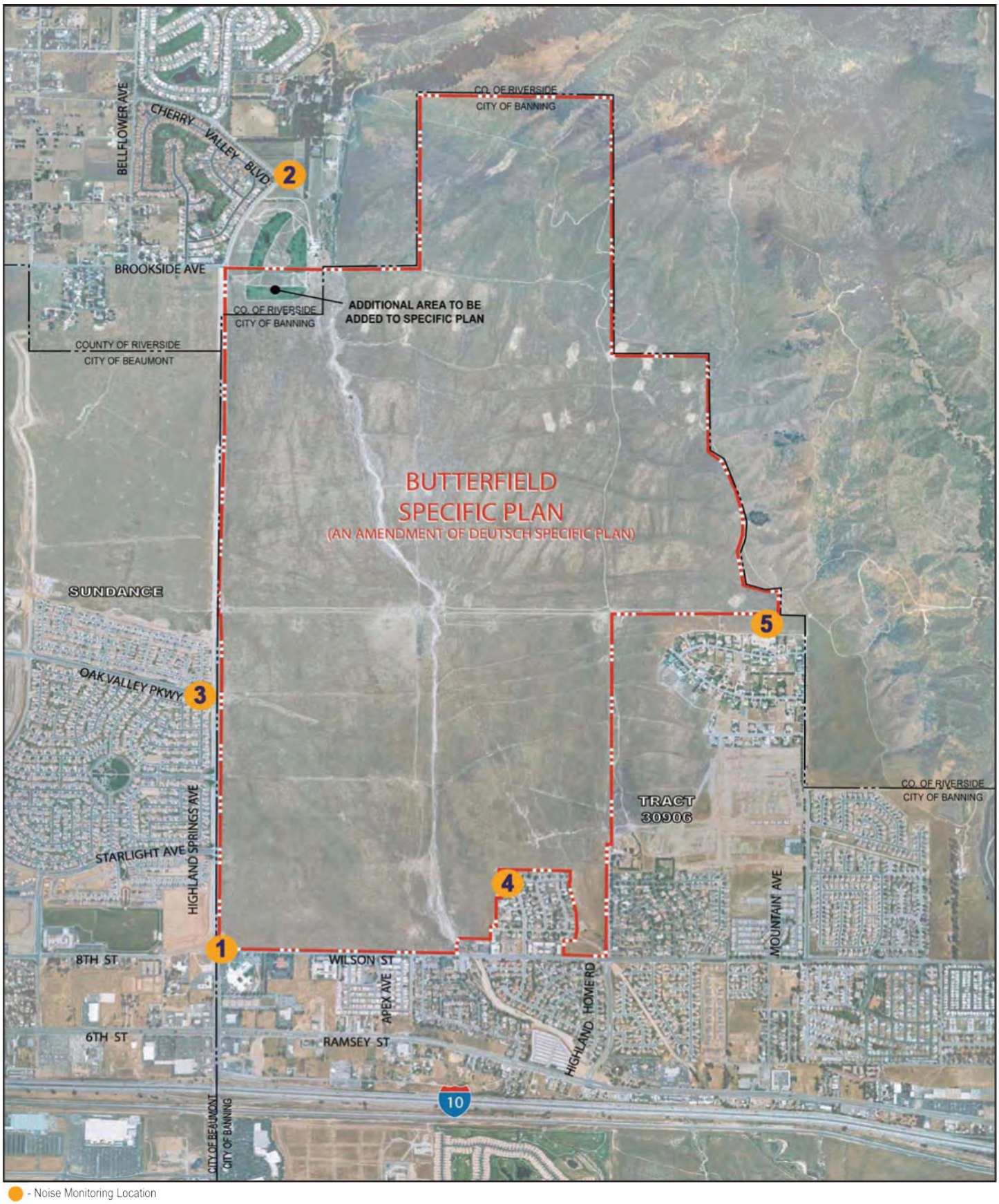
With implementation of NOI-4 and NOI-5, mobile and stationary source noise impacts to existing and proposed sensitive receptors would be reduced to less than significant levels.

As the project cannot reasonably or feasibly mitigate for cumulative mobile noise impacts (constructing sound walls along the entire perimeter of the sensitive uses surrounding the project site; force existing residential uses to change their existing windows; etc.), implementation of the proposed project would result in a significant and unavoidable impact for cumulative mobile noise impacts, as both the combined and incremental effects criteria have been exceeded.



Source: Melville C. Branch and R. Dale Beland, *Outdoor Noise in the Metropolitan Environment*, 1970.
Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA/ONAC 550/9-74-004), March 1974.

Sound Levels and Human Response



SOURCE: Google Earth Imagery (Aerial Photo date pre-2009)

NOT TO SCALE

RBF CONSULTING

5/27/11 JN: 65-100290

PARDEE HOMES • BUTTERFIELD SPECIFIC PLAN EIR

Noise Measurement Locations

EXHIBIT 4.11-2